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FARM-FORESTRY EXTENSION

EARLY DEVELOPMENT, AND STATUS IN 1923

G. H. COLLINGWOOD

Extension Forester, Office of Cooperative Extension Work and Forest Service Cooperating

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HISTORY AND PRESENT STATUS

Forestry was first given a place as an agricultural extension project in 1911 in Michigan. It was dropped, however, on the entrance of the United States into the World War. Since then Michigan has made no organized effort in this direction. New York followed closely after, where it has been taught with increasing definiteness since 1912. At first the work in New York was largely personal service, but after the adoption of the Smith-Lever Act in 1914 it began to assume a more distinctly educational character.

North Carolina has had a full-time extension forester since the spring of 1918, with the exception of about 12 months in 1921 and 1922. In 1918 forestry extension was begun in Georgia, Maryland, Tennessee, and Virginia, but the conditions following the war seem to have been responsible for abandoning these projects. Maryland was first to revive her project in 1923, the State forester furnishing a man to work with the State extension service. None of the other States definitely reentered the field up to the close of 1923. Pennsylvania included forestry as a part of its extension program in 1921, and the work has developed so rapidly that the entire time of two foresters was required in 1923.

In Iowa, one man has devoted his time to forestry extension since September, 1921, and in spite of the comparatively small area of forest land the project has met with most satisfactory results. The most recent entrant in the field is Maine, where a project was started with a forester as leader on July 1, 1923.

On December 31, 1923, seven States — Iowa, Louisiana, Maine, Maryland, New York, North Carolina, and Pennsylvania—had active projects in forestry extension. The sum of $14,187 was expended for forestry extension from Federal and State funds in the year 1922–23, which provided for the employment of six men for full time and two for part time.

Since July, 1921, the Louisiana extension service has cooperated with the State forester in carrying out a project for boys and girls. For several years past the Cloquet forest ex-

periment station in Minnesota has cooperated with the State extension service in the planting of farm windbreaks. Reports of county agents indicate that forestry projects, more or less definitely organized, have been carried on in 24 other States.

FIELD OF WORK

Farm woodlands of the country include more than 150,000,000 acres, the greater portion of which is east of the Mississippi River. This is a little less than the area of Texas, and comparable to the number of acres in those States from Virginia north to Maine. In addition, nearly as much unimproved land in farm ownership not profitably utilized for agriculture might profitably be producing timber. In spite of this, little attention is given to farm woodlands, with the result that our timber is being depleted nearly four times as fast as it is replacing itself. Adding to the urgency of the situation is the fact that many farm-woodland regions are importing the bulk of their lumber from forests 1,000 to nearly 3,000 miles away.

In spite of the neglect and haphazard management to which farm woodlands are subjected, their production is surprising. The value of all forest products from farms during 1919 was $394,321,828. Table 1 shows the value of such products sold or used in the various geographic divisions of the country during 1919.

supply their needs from their own woods. In spite of this, many farms contain woodland and waste land capable of again growing trees. With care and forethought on the part of the owner this land can produce annual crops of fuel wood and lumber products which may add materially to the farm income. When the possibilities of a single farmer are magnified so as to include more than 150,000,000 acres of farm woodland, we then may visualize the field of work for forestry extension.

In addition there is the increasing area of idle land in farm ownership. Regardless of whether the ownership of idle land is assumed by an individual or by the State, the burden is no less upon the community. Taxes must be paid. If these are not paid the land reverts to the State. The land exists, whether used or not, and money must be spent on it. Roads must be built, fires must be kept out, and the area must be given some sort of police protection. In this day of high taxes all land should be made self-supporting. To the extent that this land can be put under profitable forest cover it may also claim a place in the field of work.

In New England local industries have developed which are eager for small timber, and the woodland is rapidly assuming a place among the crop-producing portions of the farm. This situation exists in other sections and will undoubtedly be typical of most

TABLE 1.—*Value of forest products of farms sold or used during 1919*

Geographic division	Value of all forest products of farms	Value of products sold	Value of products used	Geographic division	Value of all forest products of farms	Value of products sold	Value of products used
New England	$31, 352, 700	$20, 611, 531	$10, 741, 169	East South Central	$70, 410, 506	$44, 183, 199	$26, 227, 307
Middle Atlantic	37, 118, 348	20, 795, 664	16, 322, 684	West South Central	34, 396, 936	18, 598, 546	15, 798, 390
East North Central	57, 817, 314	25, 563, 930	32, 253, 384	Mountain	4, 855, 047	2, 897, 320	1, 957, 727
West North Central	30, 460, 160	10, 532, 324	19, 927, 836	Pacific	14, 285, 900	9, 228, 983	5, 056, 917
South Atlantic	113, 624, 917	65, 304, 549	48, 320, 368	United States	394, 321, 828	217, 716, 046	176, 605, 782

Each year the ordinary farm in the United States uses 15 to 20 cords of fuel wood or its equivalent, and nearly 2,000 board feet of lumber for repairs and structural purposes. At one time the farm woodland was the source to which the farmer looked for this material. Accompanying progress in agriculture and manufacturing has been the denudation of our forests, until now comparatively few farmers can

of the country east of the Great Plains within the present generation.

Economic conditions have reached a stage where forestry is an essential part of any program of diversified agriculture, and thus forestry has become an important part of farm management. Accordingly, if we are to accomplish complete utilization of our land, the principles essential to successful forest production must be ap-

plied to our farm woodlands and our idle lands on farms.

FOREST PLANTING

There is a tremendous area of land in the United States which has been cleared for farming but which under present conditions is not of agricultural value. Most of this land is capable of producing a crop of trees. This situation, although national in scope, is especially serious to the individual landowner. Idle land, incapable of cultivation and an increasing burden upon the farm, is continuously before his eyes. A means of using this unsightly land and relieving the situation is to plant the land with forest trees. Thus the owner is given the satisfaction of helping nature to reestablish a forest and the assurance of an attractive investment. A long wait is necessary before the crop can be harvested, but a growing forest on the farm gives permanence to agriculture and lays the foundation for a future source of income.

All over the country men are gaining experience and information on growing various kinds of trees. The technique of growing and transplanting small trees has been developed to the extent that a reasonable estimate can be made regarding the cost of the effort and the probable profit therefrom. There is need of more knowledge regarding tree growth, but such as we have is sufficient to warrant the inclusion of forest planting as an important project in any program of forestry extension.

The principal objects for which forest plantations are established are (1) to produce lumber, pulp wood, ties, poles, or other distinctly forest products; (2) to produce fence posts, Christmas trees, or some similar special product; (3) to shelter farm buildings, animals, or land from wind and sun; (4) to beautify farm grounds; (5) to prevent erosion; and (6) to provide more or less indirectly a picnic ground or playground for a community, as well as to furnish a source of permanent income to counties, towns, or villages.

The long-time investment necessary for producing lumber and pulp wood is least hampering in the East, where the presence of idle land has become an acute problem and where local industries can use logs from fairly small trees. Christmas-tree plantations are universally attractive. Those for production of fence posts receive greatest attention in the intensively developed agricultural regions of the Middle West, where large areas of forest growth are less common. Windbreaks are also more popular in this region than in the East. To some extent such plantings also prevent soil erosion, but tree plantations for the express purpose of stopping soil washing are usually found in the more hilly regions of the Northeast and South. In New England, town forests are being established, and the movement promises to spread to other sections of the country.

A successful forest-planting program is dependent upon cheap and easily procured planting material. Usually this is most satisfactorily supplied from nurseries maintained by the State forester.

In beginning a planting program considerable personal service is necessary until a few demonstration plantings have been established. After a year or two a county or State-wide educational program may be organized. This has been the history of forest planting in nearly every State where it has been carried on. It is, to a considerable extent, the program in several Southern States, where forest planting is contemplated.

During 1923 extension agents conducted 1,465 forestry demonstrations, in which 1,878 forest and wood-lot plantings were made, involving 5,851 acres. Most of the trees were planted in solid blocks and will develop into forests. Windbreaks were planted on 904 farms. The figures by principal States are shown in Table 2.

TABLE 2.—*Forest planting reported by county extension agents, 1923*

State	Forest and wood-lot plantings	Acres planted to forest trees	Farms planting windbreaks	State	Forest and wood-lot plantings	Acres planted to forest trees	Farms planting windbreaks
New York	389	2,766	23	South Carolina	4	1	2
Pennsylvania	301	1,012	16	Louisiana			2
Maryland	5	211	7	All other States	1,140	1,722	593
Minnesota	24	54	213				
Iowa	14	60	47	United States	1,878	5,851	904
North Carolina	1	25	1				

Several excellent forest-planting demonstrations were carried on with boy scouts. Two notable examples were with troops working on land near Canandaigua, N. Y., and Macon, Ga. The demonstrations were carefully planned beforehand and received the full cooperation of scout leaders. In one case 30 boys made a special hike to the area and planted 5,000 small spruce trees in 3½ hours.

Excellent cooperation with the State forester has existed in New York. Ordinarily, trees for forest planting are sold by the State nurseries at prices ranging from $3 to $5 per thousand, the purchaser paying the cost of packing and transportation. During the spring of 1923 the State forester furnished 10,000 trees to each county agent for demonstration plantings. It was made clear that these trees were provided for educational purposes and that the plantations were to be located near State highways or in other easily accessible places.

Each demonstration was arranged by the county agricultural agent. Several counties started well-defined programs, and appointed committees to enlist the support of everyone who might be interested. Large county maps were cut up to correspond to local communities and distributed to committeemen with the request that they locate on the maps all areas in need of reforestation and all existing plantations of forest trees. Such a survey is not accurate, but it brings most forcibly to the attention of local leaders the extent to which farms are carrying a dead weight of waste and unproductive land. The small maps, when assembled in the county agent's office, indicated the portions of the county where forest planting should be emphasized in the agricultural program. In Herkimer County, N. Y., the survey revealed the belief of the committeemen that nearly 20 per cent of the farm area would be better if reestablished under forest cover. This county has started a contest in the rural schools to encourage the drawing of posters on the reforesting of waste land.

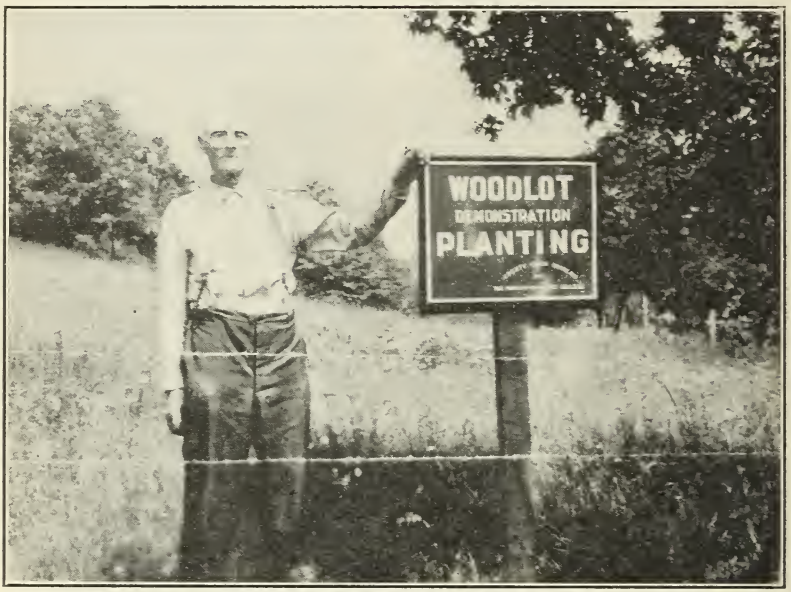

FIG. 1.—Sign calling attention to a demonstration in wood-lot planting. Such signs are effective "silent salesmen." Planting demonstrations have proved most satisfactory when located on well-traveled highways. (Photograph furnished by Pennsylvania Extension Service)

The county agents helped the farmers select planting sites for the demonstrations and, whenever possible, obtained the assistance of specialists from the Department of Forestry or from the conservation commission. Demonstrations were carried on in 43 counties, attended by 1,071 people, and nearly 600,000 trees were planted. In-

vestigations made at the close of the first growing season showed that 72 per cent of these trees had survived.

In Pennsylvania all trees for forest planting are furnished free by the State forester. Practically all of the demonstration plantings in that State are with trees grown in the State nurseries (fig. 1).

W. R. Mattoon, of the Forest Service, United States Department of Agriculture, conducted 18 planting demonstrations in six counties in Georgia and South Carolina, which resulted in the planting of 5,200 slash pines. His efforts were necessarily limited by the lack of cheap and reliable tree stock. To offset this handicap he started a number of demonstrations in the growing of pine trees from seed. Rather than postpone establishment of forest plantations until these seedlings were grown he procured a few thousand wild two-year-old seedlings, and with these gave instruction to several county agents. The resulting forest plantations will be long-time demonstrations and should inspire larger planting programs in the future. In doing this work Mr. Mattoon served as a specialist lent temporarily to the State, and worked with local people until the project was well under way.

THINNING AND IMPROVEMENT CUTTING

It is easier to encourage property owners to spend money and energy in planting a piece of idle land to trees than to get them to make any effort to develop an existing stand of small trees or timber. This difference may be due to the fact that tree planting offers tangible evidence of the labor expended—a marked and growing change is effected. In thinning or improvement cutting the change is less striking, even though financial returns are more quickly realized. There is less of the feeling that one is creating a forest by his own efforts. The extension forester must recognize this as one of his problems and devise methods by which he can make thinning and improvement cutting as attractive to the public as planting.

Fig. 2.—Demonstration cutting in short-leaf and loblolly pines. This is in sharp contrast to the common "butchering and burning" method. Regardless of whether the owner wished to hold the land for a second cutting, leaving it in a condition for good growth has often marked the difference between an asset and a liability

Maryland, New York, North Carolina, and Pennsylvania are giving more attention to thinning and improvement cuttings; and in Georgia and South Carolina woodland owners were found to be eager for information on the subject. Demonstrations of thinning and improvement cuttings were especially successful in pine of natural growth (fig. 2). Many trees removed from such a stand are large enough to

be utilized for fuel, posts, or low-grade lumber, so that the initial cost is negligible.

Demonstrations are usually located by the county agricultural agent. In company with the specialist and the owner he helps to lay out two rectangles of perhaps a half acre each, marks the boundaries, and reserves one rectangle as a check plot. The demonstration is announced in advance, and neighboring farmers are invited to be present when the trees are marked for cutting.

The forestry specialist begins by discussing the condition of the entire wood lot and if possible leads the people through a portion of it. At the same time he outlines the principles that he will follow in selecting trees for cutting. Trees that need to be removed from the demonstration plot are then blazed with an ax.

The actual work of removing marked trees is carried on by the owner. If possible, cut trees are piled where they can be viewed and measured. After the work has been completed another demonstration is held.

In Westchester County, N. Y., an improvement cutting in a hardwood forest was made under the supervision of a local consulting forester (fig. 3). The forestry extension specialist at the college of agriculture had no knowledge of the cutting until it had been completed. After his attention had been called to this excellent example of forest practice the consulting forester was invited to cooperate toward using it as a demonstration. The county agricultural agent made local arrangements for a woods meeting, which was attended by 25 property owners and was unusually successful. This demonstration showed what could be done through the voluntary efforts of one who was not previously influenced by the agricultural college. It was an added bit of evidence of the value of the extension program.

A decidedly interesting demonstration of the results of thinning 5 acres of young pine was reported by the Iredell County agricultural agent in North Carolina. During a visit to a farm the county agent found the farmer cutting his woods clear in order to provide firewood. This sacrificed the good as well as the poor trees and left that portion of the woods bare. Immediately he strove to interest the farmer in the possibilities of thinning the stand in the same manner in which he would thin a field of corn (fig. 4). Several weeks later, when the county agent again visited the farm, he found that the owner had gone through the young pines and from a few acres had cut 1,500 fence posts and 12 cords of wood. The fence posts were sold under contract at 12 cents each, making a return of $180. The expense of getting out the fence posts and delivering them amounted to approximately $80, which gave the owner a net return of $100, or $20 per acre. He had placed no value on the wood, estimating that it was worth only the expense of removal. Within the next three to five years a second thinning may be made, after which there will be a stand of approximately 200 vigorous, growing, and promising trees to each acre.

Similarly, in Worcester County, Md., a thinning in a 33-year-old stand of pine yielded 2,762 board feet of timber per acre, which sold for $41.43 and netted the owner $20.72. There were left 188 pine trees to the acre, containing about 18,000 board feet of timber. As a result, growth of the trees will be stimulated, and subsequent cuttings will be possible within a decade.

WOOD PRESERVATION

Every farmer is continually facing the problem of maintaining his fences by replacing old posts with new ones. Each year he realizes that posts cost more and the expense of reestablishing them has increased. The commercial field also recognizes this situation and urges him to buy steel posts, concrete posts, posts treated with creosote, or posts of naturally durable wood. The rapid decay of untreated posts and the expense of replacing them have convinced farmers that they can not afford to use the fast-growing common trees unless their life of service is prolonged with some preservative. Most farmers have many fast-growing trees in their woodlands, and after treatment, posts obtained from them are usable. There is need of instructing farmers regarding the kinds of post to use, material with which to preserve posts, where to get it, and how to use it.

Iowa, a great agricultural State with large fields to be fenced and comparatively little forest land, has put into effect an extension plan for treating fence posts with creosote. Through treatment farmers were able to conserve their scanty timber supply and reduce the labor of replacing rotten fence posts. The initial outlay of $50 to $100 necessary for establishing a

fence-post treating plant has held the project in check. This was especially true during 1923 when farmers of the Middle West were not making long-time investments. In spite of these discouragements, however, 13 demonstrations of wood preservation attended by 236 people were held in Iowa during 1923.

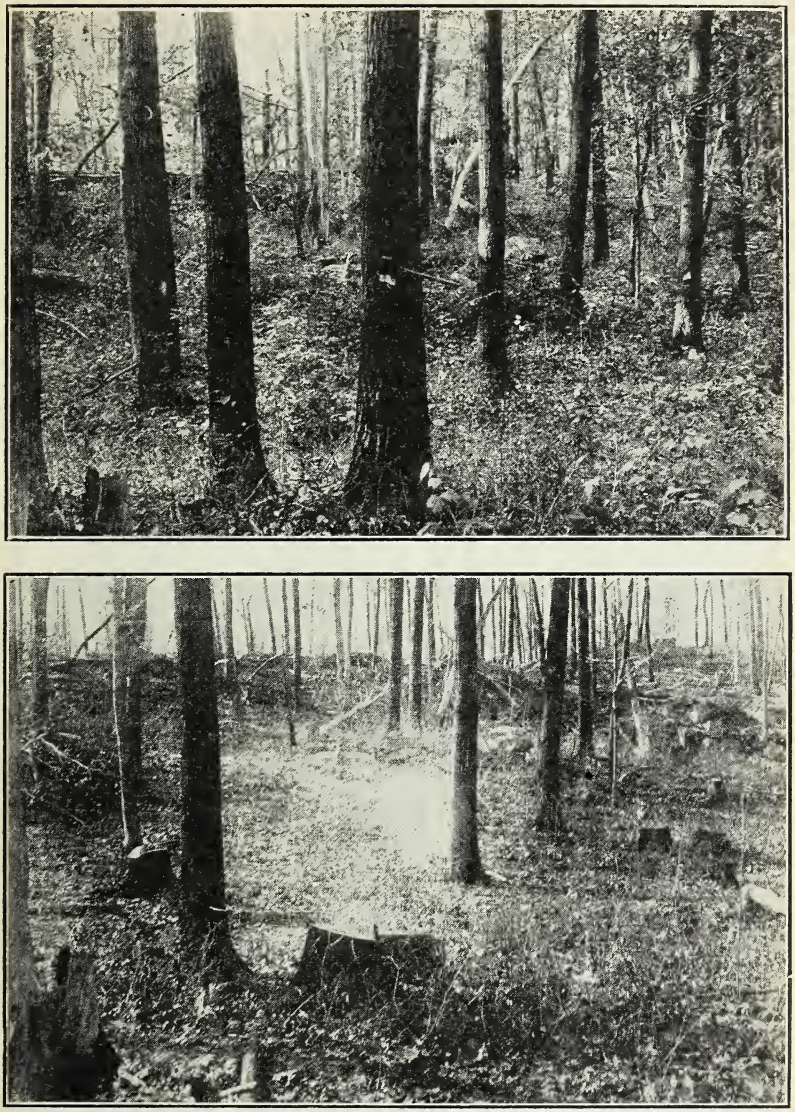

FIG. 3.—Before and after cutting in woodland injured by surface fires. The upper photograph shows the trees that were blazed for cutting. Dead trees in the background are chestnuts that were killed by the blight. The large oak in the middle foreground was marked on account of a suspicious hollow in the butt near the ground. The lower photograph shows that the suspicion of hollow butt has been verified by the hole that may be seen in the stump. The remaining trees are of good form, and the added light and space will increase their growth. (Photograph furnished by New York Extension Service)

The objects of these demonstrations were to show how to set up and operate a farm creosoting plant, to dem-

onstrate the actual saving that can be made by treating fence posts, and to encourage other farmers to treat fence posts in a similar manner.

Most of the demonstrations dealt with fence posts, but the more recent ones included treatment of cottonwood building timbers infested

FIG. 4.—Forestry extension specialist discussing the principles of thinning young pine. A portion of this stand was thinned and yielded the owner 1,500 fence posts and 12 cords of wood, bringing him a net return of $20 per acre

with powder-post beetles. Whether applied to fence posts or to beetle-infested barns, demonstrations are intended to meet an individual need that is known to be common to the community.

Fifty-five men saw farm creosoting plants put into operation at two post-treating demonstrations held in Jasper County, Iowa. They discussed methods of preserving wood and possibilities of using locally grown trees for posts. One of the plants consisted of an old gasoline drum of heavy galvanized iron, approximately 4 feet deep and 36 inches across (fig. 5). The other plant was constructed of heavy galvanized iron, with an angle reinforcement at the top. Fire boxes were built under the tanks, so that the creosote could be heated to the desired temperature. The butts of the posts were heavily treated, and before finishing the entire length was dipped for a few minutes in the creosote. All treated posts and some untreated posts for comparison were set in fences. Numbered tags were placed on the posts by the extension service, and a permanent record was kept, so that actual results might be brought out in future demonstrations.

In another county in Iowa a barn-treating demonstration was conducted in a large barn built of native cottonwood lumber. The floor boards of the hayloft had been so riddled by powder-post beetles as to render them unsafe, but the timbers of the framework were not badly damaged. Control measures consisted in spraying the entire barn with creosote and kerosene. Though such treatment does not restore strength to the infested timber, it checks the ravages of the beetle and prevents further infestation.

TIMBER ESTIMATING

So little attention has been given to trees as a crop that few farmers have familiarized themselves with methods or application of the principles of timber estimating. This lack of knowledge of timber estimating handicaps farmers in the sale of their timber. Likewise, they are at a marked disadvantage in determining the stumpage value of their standing timber. With more accurate knowledge of this sort they could meet buyers on more equal terms, and could dispose of their forest crops advantageously as they now do their other farm crops. They would also be better able to determine when to sell and when to hold their timber. This is important, since timber may be held several years and disposed of under favorable market conditions. If owners of farm woodland are to be "woods minded" they must visualize the merchantable contents of their timber as they now are able to see the number of bushels in a field of ripening grain or growing potatoes. No one thing will do more to make the farm woodland a profitable part of the farm than for farmers to know how to estimate, with reasonable accuracy, the amount and value of their woodland products.

Many foresters have the impression that timber estimating offers too many

FIG. 5.—Treating fence posts to prevent decay. For ordinary farm use a steel drum of 3 to 5 barrel capacity makes a good treating tank. Such a tank will take from 8 to 20 posts at a charge and requires but little creosote oil to operate. (Photograph furnished by Iowa Extension Service)

technical difficulties to be satisfactorily included in an extension program. The basis for this impression is that timber estimating is a science, and can not be acquired by the average layman without considerable instruction and experience. These doubts are somewhat qualified by the belief that perhaps satisfactory instruction can be given with the aid of a simple cruiser's stick, like that devised by the Federal Land Bank of Springfield, Mass. The very difficulty here set forth may serve as a challenge to forestry extension specialists.

Forestry was given a place on the agricultural extension program in Maine on July 1, 1923, and at the out-

set timber estimating was included as the basic project. Pennsylvania also has a definite plan for giving instruction in timber estimating.

In Maryland, timber estimating is a service function of the State forester. The extension service of the agricultural college gives instruction and demonstrations to show how to estimate timber, but if farmers want the estimate made for them they are referred to the State forester. In that case, the cost of the field work is shared by the owner of the woods. Broadly speaking, this work is educational, but it does not necessarily give the owner any definite knowledge as to how to estimate the contents of a tree or of a forest.

Demonstrations of timber estimating are conducted most satisfactorily in a fairly uniform piece of woods. It is not necessary that any actual cutting be contemplated, although in Pennsylvania the county agricultural agent and community leader are urged to locate the demonstration in a community where there are a number of stands of merchantable timber. As a rule all equipment other than axes is furnished by the specialist. This emphasizes the need for a simple, cheap, and easily acquired cruiser's stick.

The general plan of the demonstration is for the specialist to lead the group into the woods and to direct the men in laying out a small plot of perhaps a quarter acre. Within this plot certain individual trees are measured and the contents figured, after which the men are encouraged to estimate the contents of all trees in the sample plot. This is usually as much field work as can be included in a single demonstration. It serves as a basis for informal discussion concerning organization of workers, ways of estimating the entire wood lot, field notes, and use of various available tables. It also makes possible instruction in determining the value of timber and suggestions as to marketing. Such a demonstration is not expected to train men to become expert timber cruisers. It is enough if it can help them to make a fair determination of the volume and value of their woodland.

GENERAL AID TO WOODLAND OWNERS

Many farmers need advice in the care of their woodlands or the reforesting of their idle lands and look to their agricultural extension service for aid. The field is too large for needless competition, and in several States a plan of cooperation is being worked out with the State forester. In these States, the forester's organization probably will take over the service-giving functions that are not associated with the development of a demonstration. This will relieve the extension specialist of a considerable amount of expensive work that is not strictly educational, but will leave open the opportunity for such personal service as will aid in making possible a demonstration.

Reports from county agents indicate that 965 farmers were given assistance during 1923 in the management of their farm woodlands.

Practically all State foresters are empowered to give personal service to woodland owners, and several of them have considered this as one of their most helpful means of educating the public to forest care. The advantages of this are many, but they are largely offset by the expense and the physical inability of the forester's staff personally to affect any large portion of the woodland owners.

WHITE-PINE BLISTER-RUST CONTROL

The work of controlling white-pine blister rust is conducted by the Bureau of Plant Industry of the United States Department of Agriculture in cooperation with the authorized regulatory and extension agencies of the infested Northeastern and Lake States. In that region white pine is the most valuable timber tree, and is particularly important because of the extent to which it lends itself to forest management under farm-woodland conditions. Its loss, therefore, would result in actual hardship to many owners. During recent years white pines have been increasingly menaced by blister rust, a fungous disease which was brought into this country from central Europe. Therefore, determined efforts to apply protective measures on an adequate scale have been made by State forestry officials in cooperation with the Federal Government.

In 1916, blister rust was found to be firmly established throughout the Northeastern States. Extensive experiments conducted by the Bureau of Plant Industry and State agencies in that region from 1917 to 1921 proved that control of the disease was accomplished by destroying all currant and gooseberry bushes within 900 feet of the pine trees to be protected, and that this could be done effectively at a low cost. Meanwhile, surveys of conditions of infection in the principal pine-growing distr.cts of the Northeastern

States showed that prompt application of control methods was necessary to avert serious losses in maturing pine stands and to assure continued production of this valuable crop.

To meet this emergency a cooperative control program was begun by the department and the States in 1922. Under this program a period of eight years is allowed in which to encourage owners of white pine to eradicate all currant and gooseberry bushes in their pine stands. Wild currant and gooseberry bushes commonly grow in pine stands, and systematic work is required to find and destroy them. As a result of this campaign more than 3,000,000 acres have been cleared of these undesirable bushes, and the pine owners are increasing this protected acreage at the rate of approximately a million acres each year.

Under the eight-year cooperative control program the Bureau of Plant Industry places blister-rust control agents in important pine-growing counties or districts of the States concerned. Through them pine owners are given advice, leadership, and supervision in obtaining prompt and effective local eradication of currant and gooseberry bushes. The policy of the department is to carry on its agricultural extension activities through the extension services of the State agricultural colleges. In harmony with this policy, Federal funds for control of white-pine blister rust assigned to the States concerned are expended in accordance with definitely formulated programs, approved by State directors of extension and State regulatory officers having supervision of the work. In practice the actual supervision is performed by the regulatory officer, who in many States is the State forester, and the agents are administratively responsible to him. Active cooperation by county agricultural agents is encouraged, and in many cases the blister-rust agent shares the office of the county agent.

To inform pine owners concerning the need for practicing control work on their land general publicity is given by means of lectures, motion pictures, exhibits, news items, posters, and roadside demonstrations of blister-rust damage. These are followed by interviews and control-measure demonstrations. As early as possible arrangements are made for cooperative eradication of currants and gooseberries with towns and individuals under direction of trained foremen supplied by the State. The work of these men is supervised by the local blister-rust control agent, but the labor is furnished by the pine owners.

A feature of the publicity work developed during 1923 is the use of roadside demonstrations that point out the characteristics of the disease and its damage to white pine (fig. 6).

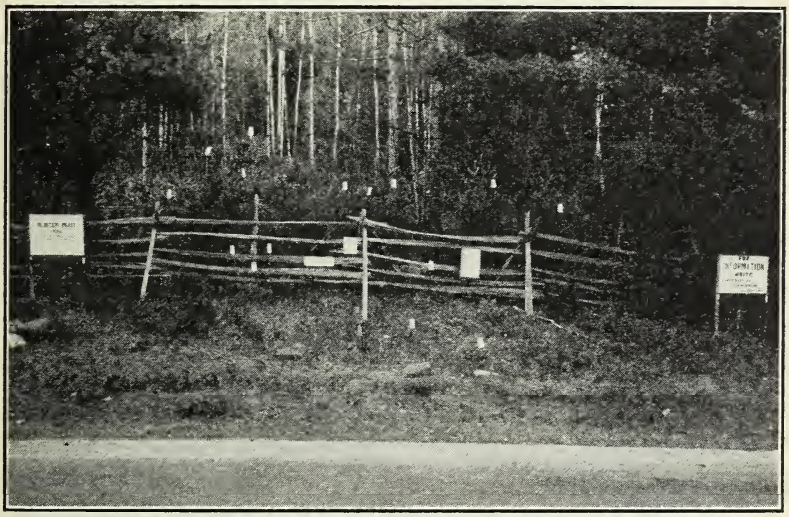

FIG. 6.—White-pine blister-rust demonstration on a public highway. Prominently placed signs directed attention to the demonstration, and yellow tags showed the location of blister-rust infection on pine trees and on currant and gooseberry bushes

These demonstration areas show diseased white pines as well as wild currant and gooseberry bushes under natural forest conditions. Posters and charts illustrating the damage to white pine from blister rust, based on careful field studies of local infected plots, have also been prepared and posted in conspicuous places.

While the basis of this work is individual instruction to pine owners, it has resulted to a considerable degree in furthering forestry extension activities. Thus, many woods demonstrations have been held. Arrangements for these were made by the county agricultural agents. After the blister-rust control agent had finished demonstrating the damage from the rust and the control methods the representatives of the State forester and the State director of extension continued the program. Better methods of white-pine management in relation to improved farm practice were explained and demonstrated.

In addition, the county agricultural agent is assisted by the blister-rust control agent in organizing permanent forestry committees in communities in the district, to develop local leadership among the pine owners in furthering control work, planting, and the care of pine lots.

FORESTRY WORK WITH BOYS AND GIRLS

Forestry work with rural boys and girls has scarcely been touched by foresters. It involves such a long period of time, and often such heavy work is required, that any attempt to organize projects after the manner of those dealing with annual crops has proved discouraging. In spite of this, county agents reported that 17 forestry clubs have been organized, and that the membership during 1923 consisted of 175 boys and 79 girls. In 1923 demonstrations were started on 51 acres of land in Louisiana, Massachusetts, Mississippi, New Hampshire, New York, and Oklahoma. (Fig. 7.)

FIG. 7.—Farm boys planting pines on abandoned farm land, following instructions of the extension forester. Trees were dug up in the woods and planted 8 by 8 feet apart. This spacing was practicable because of the rapid rate of growth. The reforesting of worn-out portions of farms has proved to be a popular and workable project

These figures are hardly necessary to show that forestry can be presented in an interesting manner to young people. The work of boy scouts and the Arbor Day exercises of the past 50 years have given proof of this. To develop acceptable projects for boys and girls is, therefore, one of the big jobs for forestry extension specialists. Until this is accomplished the forestry extension program will be incomplete.

OUTLOOK

Thus far forestry extension has been a new field with few precedents.

Growing timber crops involves application of teaching principles in a different way from that which is customary with more quickly maturing agricultural crops. With many people the planting of forest trees is more a matter of sentiment than of immediate profit. It is little wonder therefore that forestry extension teaching has savored of propaganda rather than of plans. To give lectures and distribute publicity matter regarding the need of growing timber crops for the Nation is easier than to show how farmers may profitably grow timber as a part of their farm operations. This difficulty is largely responsible for the tendency to report progress in terms of miles traveled, lectures given, articles written, and individual contacts made, rather than in terms of acres planted, woodlands improved, or board feet of lumber grown.

In order to show more tangible results, many specialists have resorted to personal service. They have spent a considerable portion of their time helping a few farmers to plant more trees or to improve conditions in their woodland; yet at the end of the year they have made scarcely any impression upon the State as a whole.

As already stated, personal service is valuable as a part of an organized plan leading to a demonstration. The demonstration has almost unlimited possibilities for spreading information, but personal service is limited in its scope, expensive, and unsatisfactory as a major activity for the extension specialist. In the future the extension specialist will consider himself as a campaign manager. To do this he must be a forester, an organizer, and, to a certain extent, a psychologist.

If the teaching of forestry principles is to be retained in the agricultural extension program, it must be upon a constructive basis. In addition to telling the public why timber growing is necessary to the welfare of the Nation and the prosperity of the individual, the extension specialist must devise means of locating individuals who will prosper if part of their activities are thus devoted. This will involve county studies and county programs, upon which may be built a forward-looking State program. The growing of tree crops must be considered in terms of future conditions as well as of the present.

Service work deals with individual problems of single timber owners, being necessarily detailed and slow. Extension activities aim to work through group organizations so that the details of the problems are handled largely by local leaders working under the leadership of trained specialists. Consequently the progress under extension methods develops with increasing force as the local leaders begin to function.

The big need of forestry extension is for plans for the State, for the county, and for each piece of work that is to be undertaken. Before preparing them the specialist must familiarize himself with the extension organization and with the conditions in his State. Plans should be made in cooperation with county agents and community leaders, but always under the guidance of the specialist. The preparation of plans may revolutionize present extension methods of teaching forestry; certainly it will involve more office work and less field work than has been customary in the past.

If forestry extension teaching is to change the minds of men as evidenced and supported by actual changes in forest conditions, it must be through concerted action of many people. The efforts of any extension specialist who works alone will not begin to solve the forest problems of his State; but with an extension organization to carry his ideas to the farmers, he may live to see actual progress.

SUMMARY

The task of forestry extension is to bring about more complete utilization of land that is not needed for agricultural crops, to increase and conserve the timber supply of the Nation, and thereby to obtain for farmers a larger income and more satisfactory living.

Thus far, satisfactory progress has been made in encouraging timber planting on waste farm land. Demonstrations of thinnings and improvement cuttings in stands of timber have been successful, and will undoubtedly occupy a place of increasing importance in the future. To some extent the teaching of methods of preserving fence posts and other timbers has met a real agricultural need. The control of white-pine blister rust has been successful because of the careful planning and the excellent supervision under which plans have been put into effect. This points the way to the possibility of including other problems of forest protection in the extension program. Other projects, such as estimating the stand of farm timber and marketing forest products, are being worked on by several extension

specialists, but have not attained the direct appeal and helpfulness of those already mentioned. Forestry club work with boys and girls is an uncharted sea. The few excursions which have thus far been made in that direction indicate that there lie some of our greatest opportunities.

The service-giving features of forestry extension teaching will be taken over more and more by the staff of the State forester. For example, in many States the growing of forest-planting stock is already one of the State forester's important functions. The most successful planting programs have been carried on in those States where the extension service cooperated by teaching farmers how to use the tree stock provided by the State forester.

The same tendency is developing in relation to estimating timber. In no State is it the desire of the extension service to estimate the contents of large numbers of farm woodlands; it is rather their desire to teach farmers the methods by which they may estimate timber in their woods. If the State forester desires to maintain a timber-estimating service, it can be arranged to dovetail with extension teachings; for many farmers, even though possessing the requisite knowledge, prefer to hire some one else to do the work.

The field of the extension organization is educational. Its machinery has been developed more particularly for solving the problems of those who raise annual crops on the more intensively cultivated fields and orchards. There is reason for congratulation on the part of foresters that this organization is now considering the problems of the rather crudely handled woodlands on farms. As the States include forestry in their agricultural extension programs there will be an increasing number of local forestry leaders. These local leaders will make possible community forestry programs which will influence the welfare and prosperity of the entire region. Not the least of the advantages of such programs will be a more acute forest consciousness on the part of many people, and a more hearty support of all things pertaining to forestry.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

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